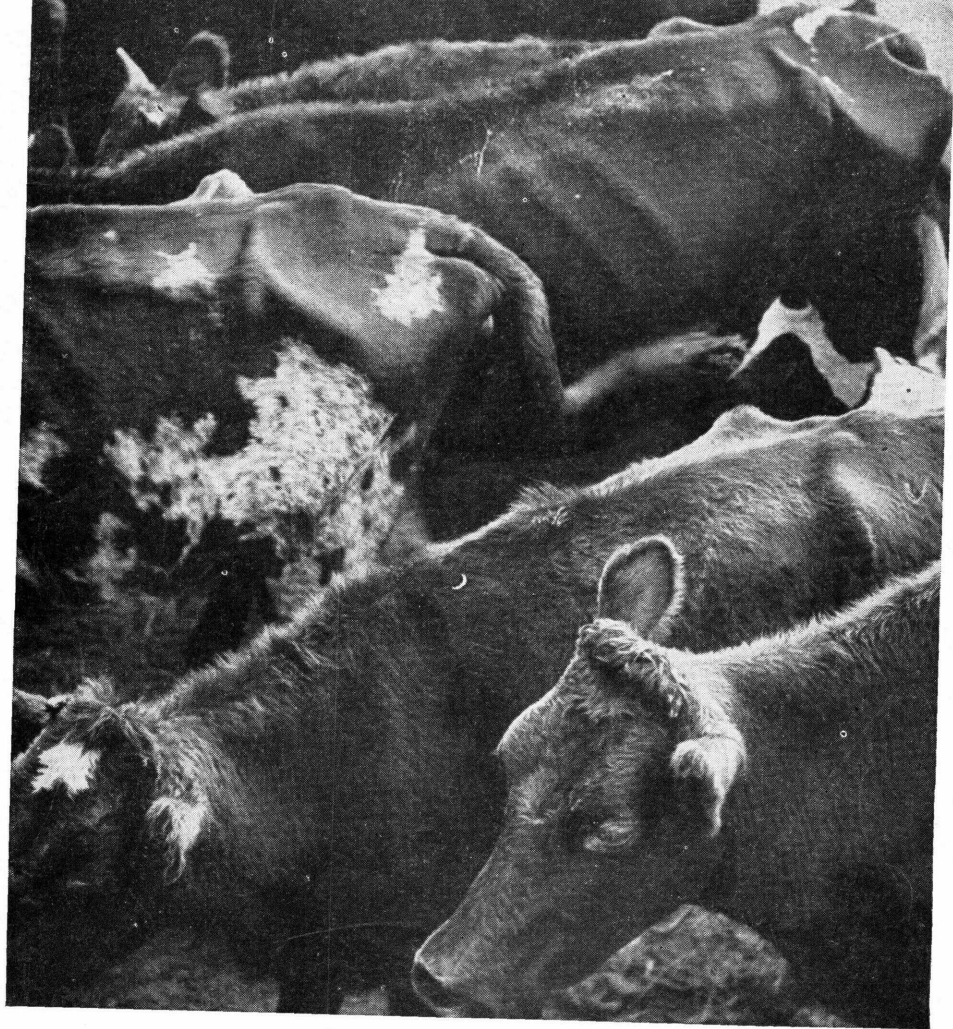


Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.

When DROUGHT RETURNS to the GREAT PLAINS



FARMERS' BULLETIN No. 1982

U. S. DEPARTMENT OF AGRICULTURE

WE'LL always have the threats of drought, crop failure, and dust storms on the Great Plains. We know that droughts have been coming to this region, off and on, for centuries. There is no reason to assume that droughts will not come again.

The highest winds have come with general droughts in the past. This means there is real danger that we may have another Dust Bowl on the Great Plains with the next long drought. The soil will probably blow sooner in the next general drought if it is not protected. Land that blew before has not fully recovered and will blow more readily next time.

It is because of the threat of another Dust Bowl that this bulletin is written. We learned a lot about controlling wind erosion during the long drought of the thirties. This bulletin points out some of the methods that proved successful then. It tells about some of the things that farmers and ranchers are doing now to prevent another Dust Bowl and take some of the hazards out of Plains farming.

CONTENTS

| | Page |
|---|------|
| <i>The Plains will have more droughts.....</i> | 1 |
| <i>You can't tell when droughts will come.....</i> | 2 |
| <i>We may have another Dust Bowl.....</i> | 3 |
| <i>We don't need to have another Dust Bowl.....</i> | 4 |
| <i>Get ready for the next drought.....</i> | 5 |
| <i>When drought strikes.....</i> | 8 |
| <i>If drought continues.....</i> | 10 |
| <i>Long-time conservation plans.....</i> | 13 |
| <i>Conservation pays dividends.....</i> | 13 |

When Drought Returns to the Great Plains

By TOM DALE, *information specialist, Soil Conservation Service, in collaboration with subject-matter specialists*

THE PLAINS WILL HAVE MORE DROUGHTS

You can't depend on the weather of the Great Plains. You may get rain when you need it. You may get only high winds or hot winds when you want rain. Enough rain falls during most years to make a crop, but it doesn't always fall at the right time. In other years there may be almost no rain.

There is one thing about the climate of the Great Plains, however, on which we can depend—sooner or later we will have another long drought. Droughts have been coming to the Plains for centuries—they will come again.

The drought that we remember best was the one during the 1930's. That was the longest and worst drought since weather records were started. It did more damage to the land and more harm to the people than any other drought. There are people still living on the Plains, however, who remember the bad drought of the 1890's. They have seen other droughts since then. They will tell you that the drought of the 1930's was not the first long one. Also, they will probably warn you that it will not be the last.



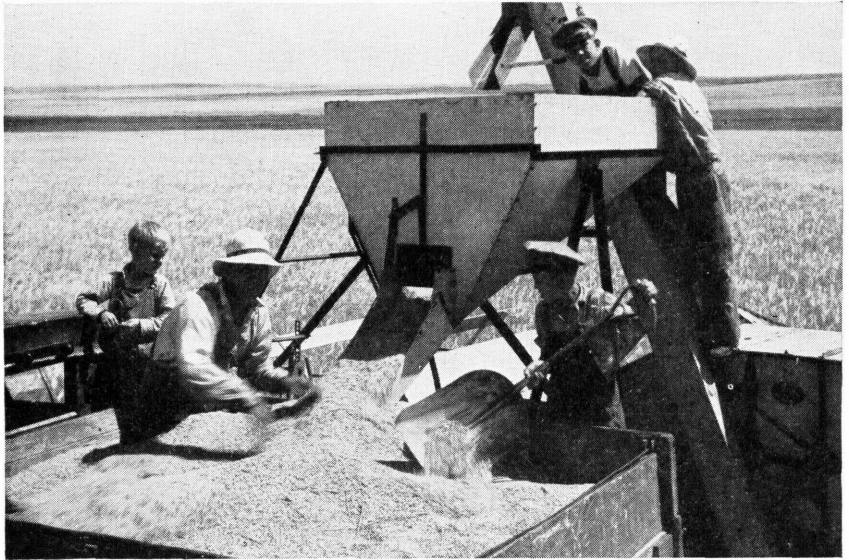
This farm, in the Oklahoma Panhandle, was abandoned during the 6-year drought from 1932 to 1938. Most of the land was severely eroded by wind. It will be of little use as cropland for years.

YOU CAN'T TELL WHEN DROUGHT WILL COME

You can't tell when the next long drought will come to the Plains. It may start next month. It may not come to your farm for 20 years or more. But it will probably hit you within the next 5 or 10 years. When drought starts, you never know when it will end. It may rain tomorrow, but it may not rain for months. When rain does come, it may not be enough to raise a crop.

Short droughts come almost every year to the Plains country. Usually, they don't cause severe damage. Farmers and ranchers who have lived long in the region generally know how to get along during short droughts. It is the long drought that hurts.

Long droughts don't come often, but when they do come they ruin many farmers and ranchers and severely damage much of the land. The drought and dust storms of the 1930's almost ruined millions of acres in the Great Plains. Most of the topsoil was blown off many fields; hummocks and sand dunes covered others. Crops failed year after year and the grass grew shorter and thinner on the range. Thousands of farmers and ranchers went broke and many had to leave their land.



This South Dakota farmer is harvesting his 1939 crop of barley that made more than 30 bushels per acre. The Plains yield bumper crops when it rains, but you can't tell when it will rain.



A dust storm of the "black roller" type that swept across the Great Plains in March 1937. We have had many storms of this kind on the Plains during the last 15 years. We may have more.

WE MAY HAVE ANOTHER DUST BOWL

There is still a lot of one-crop wheat farming on the Plains. Some landowners and farmers are still plowing up sod on the western fringes of the old Dust Bowl. Good weather and high prices for meat have encouraged heavy stocking of the ranges. These are the very things that helped bring about the bad dust storms of the thirties.

You don't have to tell the farmers of the Dakotas about the dangers of the soil blowing again—not those who were there when the huge "duster" swept down from Canada in May 1945. Nor do you need to warn those of western Kansas who went through the "black blizzard" in February 1946. Yes, we may have another Dust Bowl with the next long drought unless conservation measures are widely used.

The Soil Will Blow Sooner—Next Time

Soil erosion on unprotected land will probably be worse during the next severe drought than during the last one. Most of the soil will blow sooner next time. Much of the land that blew before has not recovered from the damage. A large part of the organic matter and fine soil particles were blown away and the granular structure of the soil was broken down. It will take years of good farming to restore the good soil structure. Until this is done the soil is more likely to blow when exposed to high winds.

WE DON'T NEED TO HAVE ANOTHER DUST BOWL

Drought and high winds don't always cause dust storms—it takes loose dirt to make dust. Soil that is protected with ground cover will not blow away. Soil that retains its original structure and is bound together with organic matter and crop residues is not likely to blow.

The soil can be tied down. There were thousands of fields on the Plains that did not blow through all the Dust Bowl years. Few pastures blew unless they had been overgrazed. Where growing plants or dead plants protected the soil or held it together, there was not much damage from wind erosion.

We get enough rain, even during most drought years, to grow some sort of crop if all the water is saved and used for the crop. You seldom need to let the high spring winds catch you with large fields that are bare of cover. Soil blowing can be stopped, even on bare fields, if you get to it in time. No, we don't need to have another Dust Bowl. But we may have one unless we do something to prevent it.

Many farmers and ranchers are trying to get ready for the next drought because they know that it is coming. Others are just hoping it won't happen again.



Contour lister furrows are holding water from a 2-inch rain on this Kansas field. This field made a good crop the following season in spite of a drought that followed this rain.

GET READY FOR THE NEXT DROUGHT

The time to get ready for a drought is when you have moisture. You can't conserve rain water if it does not fall. You can't grow cover crops without moisture. You can't do stubble mulching unless you can grow crops for the stubble. You can't build up the organic matter in the soil when drought kills off most of the crop. You can't grow grass on barren land during a severe drought. You can't expect to grow a windbreak to protect a blowing field during a long drought. The time to start these things is during the wet years.

Feed crops will probably be short during drought years. You should have a reserve supply of grain and forage on hand when drought starts. Then you won't need to overgraze the range, and you won't have to graze off stalks and stubble that are needed to protect the land. The time to build up feed reserves is during the good years.

Water Conservation

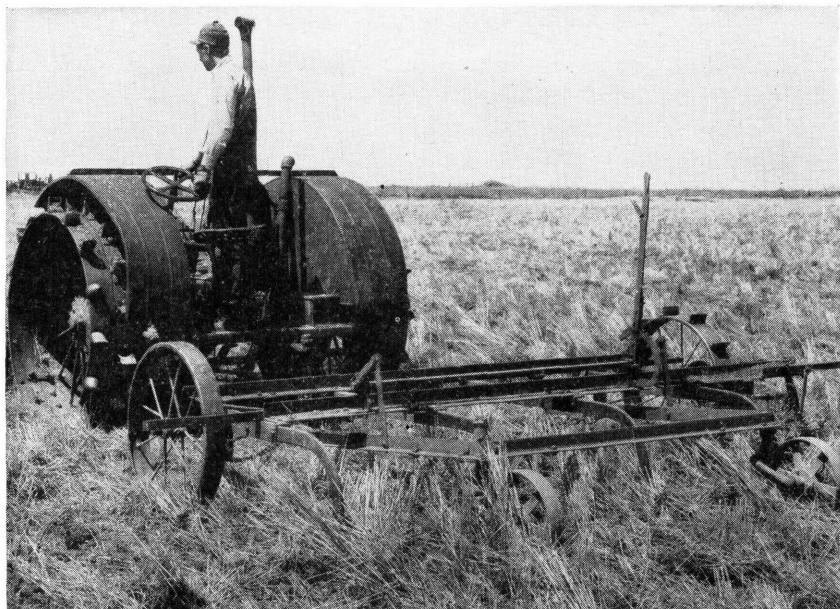
We haven't found a way yet to increase the amount of rainfall or to control the time at which it falls. But there is still something we can do about the water situation on the Plains. After all, it isn't the amount of water that falls which counts. The important thing is the amount of water that soaks into the ground and is kept there until crops can use it.

All measures for conserving water may be roughly divided into three classes: (1) Getting more water to soak into the ground by stopping runoff, (2) checking evaporation of water from the soil, and (3) keeping weeds from using up the soil moisture. We have many conservation practices that will help to do one or all of these things.

Contour tillage will help to stop runoff. Stubble mulching or trashy tillage will permit more water to soak into the ground and will check evaporation. Summer fallow will help to store water in the soil and will keep the weeds from using it. The basin lister and other special tillage implements may help. Tree shelterbelts may help to conserve water by catching drifts of snow and checking the force of winds that evaporate soil moisture. Contour furrows and water spreaders have proved helpful to many ranges.

Water conservation should be started before drought strikes. If you store all the water that the soil will hold during wet periods, it will take a long drought to cause complete crop failure. Crops that are planted on land with moist subsoil usually succeed even in dry years.

Water is the lifeblood of Plains agriculture. You seldom get too much rain on the Plains. Water conservation will pay even during the wet years. And it may mean the difference between success and disaster during drought years.



This Nebraska farmer is tilling his wheatland with a rotary rod weeder. It leaves most of the straw and stubble on the surface. Many Plains farmers have found that stubble-mulch farming like this conserves both soil and water.

Get the Land Ready for Drought

The time to get your land ready for a drought is when you have moisture. The soil will blow if it is not bound together or covered up when drought strikes and the high winds come. You will not know that you have a drought until it has been with you for several months. You may not be able to grow a cover crop for the land after the drought starts. You can't expect to improve the soil structure or build up the organic matter during drought years.

Cropland should have some type of cover on it all the time. Stubble, straw, or stalks will make a good cover when you don't have a crop growing on the land. You should have plenty of stalks, straw, roots, or other crop residues mixed with the topsoil. These residues will help to hold the soil together and keep it from blowing when the ground is bare.

Stubble-mulch farming is one of the best ways to get cropland ready to stand a drought. Any type of farming that saves the crop residues and mixes them with the topsoil will help. A growing crop, especially the sorghums, will furnish ground cover. Sorghum strip crops may

furnish enough cover for an entire field if the ground is in good condition. Border strips of drilled sorghums may help protect your fields from nearby blowing land. Windbreaks of trees will help check the force of eroding winds. The important thing is that all land be protected.

Put More Land to Grass—Plant Trees

Grass is the most profitable crop that can be grown on much of the Great Plains; it is the only profitable crop for millions of acres. All idle and abandoned land should be planted to grass. Some of the land now in cultivation should be returned to grass. Grass is the best cover you can get for land that is likely to blow.

You can grow grass on almost any type of land in any section of the Plains. Buffalo, blue grama, side-oats grama, western wheatgrass, the bluestems, and many other grasses were growing on the Plains before settlement. They will still grow there if given half a chance. During recent years we have introduced several grasses from foreign lands that do well. Crested wheatgrass has given outstanding results on the northern Plains. But grass must be planted with care if it is to thrive. And you must have moisture in the soil when you plant it. The time to plant grass is during the wet years. It will be too late to get the bare ground covered with grass if you wait until drought strikes before planting it.

Trees, growing in belts or clusters, will give protection to cropland, ranges, and farmsteads. You can grow trees in most sections of the Plains. But you must select the species and planting sites carefully in the drier areas. Young trees must be protected from livestock and cultivated for the first few years. You may need to divert extra water from nearby lands to windbreak sites in the drier climates and during drought years. Certainly, you should not wait until drought comes to plant trees. Start your tree windbreaks during the wet years.

Get the Range Ready for Drought

Many ranges have been ruined or severely damaged during droughts, but drought alone seldom causes permanent damage. It is the overgrazing before and during droughts that causes most of the damage. The native grasses can stand a lot of drought if they are in good condition when the drought starts.

You should build up the range during good years by moderate grazing. Keep reserve feed supplies on hand so that you can cut down the grazing load on your range when drought strikes. Build water spreaders and other conservation structures in time.

WHEN DROUGHT STRIKES

The two main things that most Plains farmers hope to do during a severe drought are: (1) Prevent complete crop failure and (2) keep their soil from blowing away. This is the time those soil and water conservation practices will really pay off. Soil is not likely to blow if it is in good physical condition and is covered. It will take a long drought to cause complete crop failure if you have saved all the water from the last rains.

If the Soil Starts To Blow—Emergency Measures

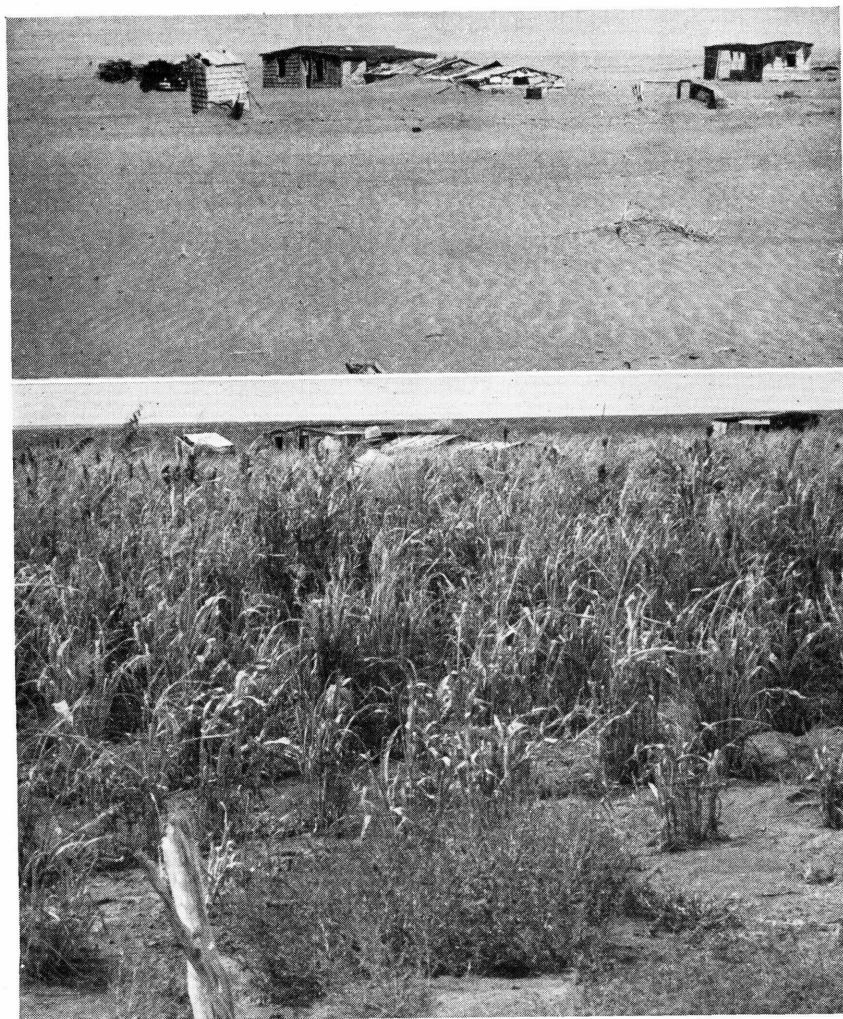
If you have some unprotected fields and the soil really starts to blow, you can't wait until tomorrow to stop it. Soil blowing may spread from a small spot to an entire field in a few hours. It may spread over several farms in one afternoon. Soil blowing must be stopped by emergency measures as soon as it starts.

Deep listing is probably the best and quickest way to stop a field from blowing. You don't have to list all the ground unless the blowing is very bad. Lister furrows as much as 2 rods apart may check blowing if you list in time. Some farmers prefer to list in strips about 2 rods apart and then list between these strips when necessary.

Other implements may be used for emergency tillage if a lister is not available. Any implement that leaves a ridged or rough and cloddy surface should help stop soil blowing. All emergency tillage should be on the contour if the land is sloping. Contour furrows or ridges will help hold water on the land when a rain comes.



This Colorado field has been partly listed to stop soil blowing. The space between furrows may be listed later if the land starts to blow again.



All the topsoil was blown away from this Colorado farm during the long drought of the thirties. The bottom picture was taken 6 months after the top picture. Cane was planted on the land after a 1-inch rain. Because of dry weather the cane did not mature, but it furnished ground cover to stop the soil blowing.

Tillage to stop soil blowing is only an emergency measure. You can't hold the soil very long by tillage alone. The soil will blow again as soon as the ridges have worn down or the furrows have filled with dirt. You must grow a crop and get cover on the land to permanently stop the soil blowing. That is why it's so important to save all the water when the rain comes.

IF DROUGHT CONTINUES

If a drought lasts for many months, you should prepare for the worst. If your land has been blowing, you should get it covered with a quick-growing crop as soon as possible. You will always have the danger of soil blowing until you get cover on the land. This is a time to play safe; you can't expect to make profits. The main things are to save the land and conserve your capital.

Get Cover on the Land

Conserve every drop of water that falls—store it in the soil until you have enough to plant and grow a cover crop. Plant as soon as you have enough moisture in the soil. Grain sorghums, cane, Sudan grass, or broomcorn are the best cover crops if your land has been blowing. You can plant them any time you have soil moisture, from spring to early fall. They may not mature but they should grow enough to protect the land. If blowing has not been severe, wheat, barley, rye, and other small grains make good cover for the land when you have enough moisture for them to get away to a good start.

Of course, you will want to raise a crop that you can sell or feed to livestock if possible. But a cover crop is more important than a cash or feed crop if your land is blowing away. Even a cover of weeds is better than bare land.

This is no time to gamble on a wheat crop: Don't plant wheat or other small grains in dry soil—not if the land has been blowing. This is inviting disaster. You will probably just waste your seed and the land will continue to blow. Wheat planting in dry dust was one of the things that brought on the last Dust Bowl.

Sometimes you can afford to plant sorghums in dry soil—especially if you plant with a lister and on the contour. The safe thing to do, however, is to conserve all rainfall and wait until you have moist soil before planting anything.

Keep Cover on the Land

Once you get cover on the land, keep it! Don't remove or plow under any of the stalks or stubble until you have enough moisture in the soil to make the next crop fairly certain. Don't graze the stalks and stubble heavily—especially on land that has been blowing. This is a good time to start stubble-mulch farming if you haven't already been doing it. A stubble mulch will protect the land and help conserve moisture. It is also a good time to start strip cropping. Strips of sorghum will help protect land that you wish to plant to wheat.

The important thing is to keep the land covered so that it will not blow. A growing crop, stubble, straw, stalks, or weeds should cover the land as long as the drought lasts.

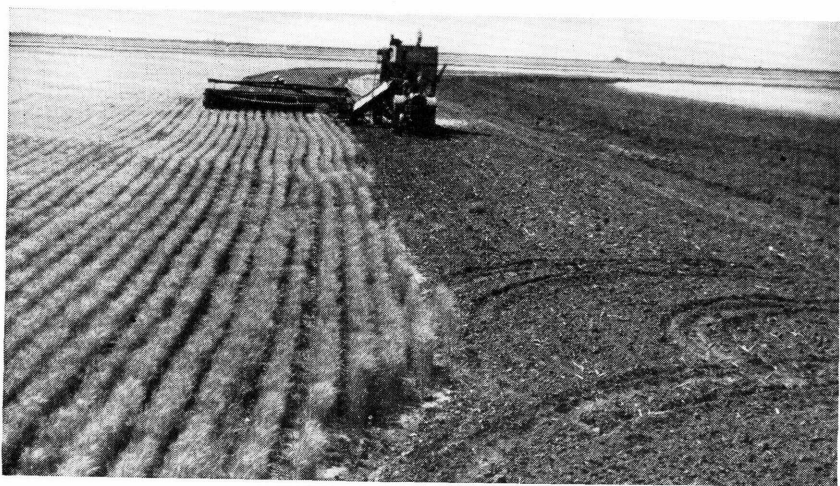


A Kansas wheatfield that has been terraced and stripped with sorghums.

Don't Forget the Idle Land

Any time we have several dry years together we are going to have a lot of abandoned cropland on the Plains. Most of the abandoned and idle land will be blowing. Soil blowing from such land can spread to nearby fields. It may even cause nearby ranges to start blowing.

If there is idle or abandoned land next to your farm, you should be sure that it is kept under control. Where soil conservation districts are operating, they will usually take care of such land. It will often pay you to lease idle land near your farm and plant a cover crop on it in order to protect your own land. Border strips of drilled sorghums around your farm may help protect the land from nearby blowing fields.



The field shown above 8 months later. The wheat is being harvested and the strips that were in sorghum are being fallowed.

Don't Overstock the Range

Watch the range closely during a long drought; the grass is likely to grow shorter and thinner each year. You can't afford to overgraze the range at this time. Drought alone will not kill much of the grass on a good range that is properly grazed, but grass may die rapidly if overgrazed. It may take many years of good weather to restore a range that has been overgrazed during a long drought.

Cut down on the grazing load as long as the drought lasts. If you have plenty of reserve feed on hand, you may do this without heavy loss. If you have more stock than you can feed, you had better sell some even if you take a loss. Stock held on an overgrazed range will lose weight and your loss may be greater. Also, you may ruin the range.

If you have water spreaders and other water-conservation structures, they should pay dividends at this time. If you haven't, this is a good time to build them.



This Texas Panhandle pasture is in the heart of the old Dust Bowl. It was not grazed during the drought years 1934 to 1938 because there was not enough grass to graze. Three years of normal weather and light grazing restored the grass until it looked like this in 1941.

Cropping Plans

You can't make long-time cropping plans while the drought lasts. You can't even plan your crops a year ahead. If you expect to grow a crop during a drought, you must take advantage of the breaks in the weather. Always be prepared to plant a crop when you get a good rain. Also, be prepared not to plant if it doesn't rain.

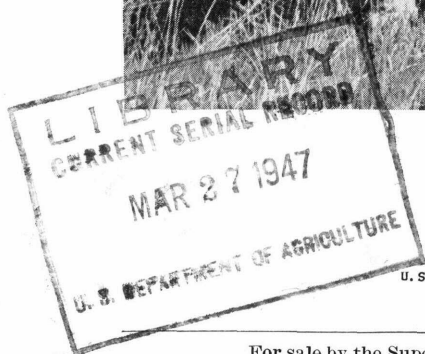
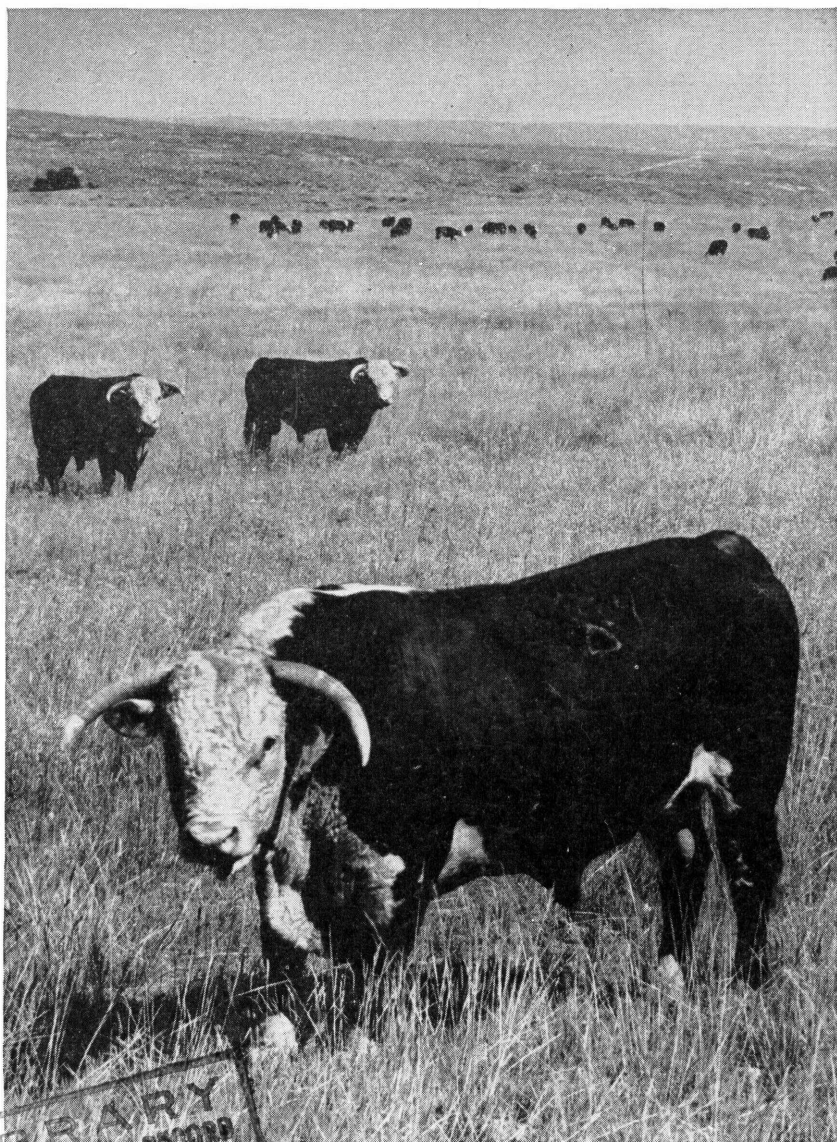
LONG-TIME CONSERVATION PLANS

You can stop soil blowing after it gets started. Thousands of farmers did it during the thirties. Many of them stopped the soil blowing before the drought ended, but it was a tough and expensive fight. The only safe way to farm on the Plains is the conservation way. Stop the dust storms before they get started. This calls for long-time conservation plans. Nothing less than a complete soil and water-conservation program will do the job. Every field should be used for the purpose to which it is best suited. Every acre should be treated according to its needs. There are conservation practices suitable for every acre on your farm or ranch. Your problem is to find the practices that fit your land and start using them.

There are several hundred soil conservation districts in the Great Plains. Each of these districts helps farmers and ranchers install complete conservation programs. Most of them furnish expert advice and assistance. Many of them furnish other types of aid. If you don't live in a soil conservation district, you can usually get help and advice from your county agent.

CONSERVATION PAYS DIVIDENDS

There are thousands of farmers and ranchers on the Plains who have reported that soil and water conservation increased their yields and profits. Many have increased their yields of wheat, cotton, sorghums, and corn, through contour tillage, terracing, stubble mulching, and other practices—and the greatest increases were during the drought years. Others have found that strip crops and strip rotations increased their yields and gave them a more steady income. Many ranchers have made their ranges produce more grass by grazing them less or by grazing at the right time. Others have increased grass growth with water spreaders and contour furrows. And all the time, these conservation-minded farmers and ranchers are protecting their soil against erosion and the ravages of drought.



U. S. GOVERNMENT PRINTING OFFICE: 1947

For sale by the Superintendent of Documents, Washington, D. C.
Washington 25, D. C. - Price 5 cents